# The MAC Flyer

JANUARY 1973

MILITARY AIRLIFT COMMAND
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For Greater Efficiency
in MAC Air Operations

# The MAC Flyer

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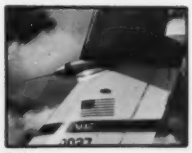
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COVER: A C-5 Galaxy stands serenely in a cold, dark night while MAC maintenance men ready it for another mission.

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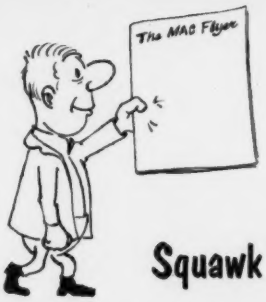



## Squawk Box

Greetings! You're reading the first issue of The MAC Flyer for 1973. True, it looks a lot like one of last year's issues, but your safety magazine is constantly changing. Some of the changes were triggered by your responses; some we felt were needed to upgrade our product.

### HAPPY

One change we hope to bring you in 1973 involves our master plan. If it works, you'll see individual issues which highlight several aspects of a single topic: maintenance and materiel, operations, life support, airlift, service missions, and seasonal materials.

### NEW

So much for our writing plans; what about *yours?* Why not try your hand as an author in 1973? Consider these possibilities:

* Our Writing Contest — Surely you have a tale as good as some of last year's, don't you?

* Feature articles — All military magazine editors need copy and will welcome your efforts.

* Or maybe you lean toward practical matters. Your support of better hazard and failure reporting, and even of the suggestion program, can make a difference.

### YEAR

Okay, there's your challenge. Make an after-the-Rose Bowl resolution to put some words on paper for the betterment of self or corps. Who knows — you might even find that you're as great a writer as your last rating official said you were.

Mr. or Ms. Reader, in the social season just ending, perhaps you tarried too long at the punch bowl or toasted the health of the new year too freely. For you, and for others who have been exposed to the wild, wild world of booze, we present a double feature. Part one deals with what alcohol is and how it affects us generally. Part two moves on to address intoxication and other effects, and reviews some of the post-drinking problems and cures. Together they make up a hefty package, but it will be well worth your time to take a close look at our report on the commonest drug, alcohol.

Ah, my Beloved, fill the Cup that clears
Today of past Regrets and future Fears . . .
—The Rubaiyat

## Part One:

# The Basics of Social Self-Medication

by Maj R. L. Wing

ONCE UPON A TIME, one of your friendly TMF staffers was penning a C. R. Terror tale and rambled on longer than his allotted space permitted. The editor shortened the story by drastic surgery. However, one of the cut scenes was saved — a scene which will serve as an excellent introduction to today's topic. In fact, some of you might regard this scene less as a fictional episode and more as a factual report of your own recent activities. Let's join C. R. in a bit of holiday action:

* * *

*The party had been what even the Paunchy Potentate of Potables would call a rousing success. All traces of his year-end gloom had been eliminated — along with the marinade for half a dozen olives — before he pranced through the club door. Once inside, he escorted his lady-love Tassels and a host of other damsels through a continuous series of passes at the punch bowl. With no toothpicks to serve as nagging tipple-tallies, the Great One achieved a low orbit well prior to the midnight whoopery. And, as the night wore on, he reached new heights of zaniness — drinking champagne from the chef's shoe, stepping on the wing safety officer's tongue,*

# The Basics of Social Self-Medication

*and actually telling Blinky about his introduction to belly dancing as a contact sport. It was long after the night manager had planned on locking the doors before he was able to convince the Snockered Skyman to vanish into the sunrise — and then only because the punch bowl was arid as a ground safety lecture.*

* * *

*The queen of the parade was just gliding her rose-laden way through beautiful downtown Pasadena when the phone began firing intermittent bolts of pain through the inert figure. Again and again it rang, persistent as advice from a mother-in-law and painful as brain surgery done with trenching tools. Finally a disordered mass of bedclothes, tuxedo remnants, flab, and bad breath moved with stricken-whale grace toward the offending instrument.*

*The message was brief: "You are alerted for an exercise. Show time is ASAP. We're getting an ORI." And the response was almost as brief: C. R. slid slowly into a heap on the floor.*

* * *

So much for one man's version of the lost weekend. The action agent in this entire affair was not the party nor the people — it was the compound that put the punch in the potables: alcohol. Many of us know a lot about what alcohol can do to us personally — but mostly only from a subjective standpoint. In other words, we felt our way through our encounters — from first glow to last groan. But do you know what the stuff really is, what it does, and what can happen when you overdo? On your behalf, we spent some time wading through the big words and thick books, and came up with some facts you may find verrrry interrrrresting.

## The Medication

First, what is it — this filler of the cup that cheers, this demon rum, this elixir of the ancients? For a dictionary definition, take a peek at the adjoining box. That word picture pretty well covers the pure stuff — but anyone belting medicinal alcohol won't be reading TMF. So let's consider alcohol in the form of the brews that we soak up — the blends of pure alcohol and everything else from juniper berries to table salt. Some of our pet potables have a low alcohol level — like 3.2 beer and spiked Shirley Temples. Others have a stout clout — like martinis and straight shots (35-50 percent alcohol, depending on booze proof and mix ratio).

What your favorite sauce tastes like depends greatly on what it was made from — grapes, barley, grain, potatoes, molasses, you name it; all offer some distinctive flavor elements. And the processes between brewer and belter also play a role — whether the final product is fermented, as in beer and wines, or is distilled, as in whiskey, rum, gin, vodka, and brandy. Also, for home consumption purposes, the mixers too have some effect — be they bitters or vermouth or whatever it is that folks in your place also use for bathwater.

According to the chemists, the measurable differences between various liquors are usually a result of compounds known as the congeners. These are present even in the highly distilled forms of alcohol, and are not eliminated by aging. They include some of the higher alcohols (such as fusel oil), aldehydes, acids, ketones, and others, many of which have not yet been identified. And, while the effects that your favorite brew has on you are largely a result of the basic alcohol content, some of your reaction — and much of your hangover — depends on the nature and amount of the various congeners.

So much for the booze in the glass. Let's move on — to booze in the inner man. What happens after the consumable is consumed?

### Definition

Alcohol — a colorless, limpid, volatile, flammable, water-miscible liquid, $C_2H_5OH$, having an etherlike odor and pungent, burning taste, the intoxicating principle of fermented liquors produced by yeast fermentation of certain carbohydrates, as grains, molasses, starch, or sugar, or obtained synthetically by hydration of ethylene or as a byproduct of certain hydrocarbon syntheses: used chiefly as a solvent in the extraction of specific substances, in beverages, medicines, organic synthesis, lotions, tonics, colognes, rubbing compounds, as an automobile radiator antifreeze, and as a rocket fuel.

—Random House Dictionary

The initial step, of course, is to get from the belly to the bloodstream, and alcohol has the unique ability to do this directly and immediately, with no digestion involved. It is also one of the few foods which starts being absorbed before it moves from the stomach to the small intestine. However, a number of factors affect how rapidly whatever you drink is absorbed.

## The Dose

First, of course, is the total amount of alcohol in the drink, or to use the medical term, the dose. Up to a

point, the more alcohol available the faster it will be absorbed. To determine accurately how much pure alcohol you've consumed (which is more likely to be done while waiting to get well than while celebrating), you must first determine how much beverage you have actually poured down. Unless you are unusual, you probably drink your beer or wine straight; determining dose is just a matter of multiplying the total volume in ounces by alcohol percentage. Sample values are four percent for the suds and fourteen percent for typical table wines, giving doses of .48 oz per beer and .56 oz for a 4-ounce wine glass.

The process is similar for mixed drinks, remembering that you're only concerned with the bottled goods and not the mix. Say you built your belt with three ounces (three shots) of Old Overshoe. Now, if your O. O. bottle label says "80 Proof," cut that value in half for actual alcohol content and multiply: three times 40 percent gives 1.2 ounces of pure alcohol. This dose, incidentally, will put your blood alcohol (BA) level above the .06 percent level, which is more than halfway to being "definitely under the influence" according to the American Medical Association and the Uniform Vehicle Code.

Other factors which affect absorption rate are these:

* Dilution of the drink. At weaker concentrations, alcohol isn't absorbed quite as rapidly. Note: alcohol mixed with water is absorbed a bit more slowly than when soda or cola is the mixer.

* Presence of food, especially fatty foods like peanuts, sour cream dip, or cheese. Apparently the alcohol now has two fields to play in — bloodstream and digestive mill — and this slows things down.

* Variety of alcoholic beverages. Beer has more carbohydrates (and calories) than the hard sauces, and this food value again slows things down a bit.

* Time span of ingestion. If you're drinking slowly enough so your liver can keep up with your intake, absorption just keeps pace. In effect, you are rationing your BA level.

## BA Buildup

Now let's go back to our mathematics exercise. You've poured down that concoction of Old Overshoe and Seltzer which by anyone's standards was a healthy belt. Your liver, the organ charged with processing the alcohol, starts oxidizing the alcohol almost immediately. However, it can handle only one-third of an ounce per hour — a figure that's fairly constant whether you're a 90-pound weakling or a defensive lineman for the Redskins. (Note: Body size does have *some* effect — a big guy has a lot more plumbing to raise the blood-alcohol level in, and it's the blood alcohol level that affects the whole man.)

So, that 1.2 ounce-load will have over three hours of burnoff time. But say you pull a C. R. and average 1.2 ounces of input per hour for the six-hour duration of the party. At quitting time you have burned off two whole ounces, soaked up 7.2 ounces, and have a blood-alcohol level of off-scale smashed. In fact, you probably won't even make it out of the room under your own power.

Let's carry the arithmetic — and you — a bit farther. You hit the sack, and while you lie down with one foot held on the floor to keep the room from spinning, your ol' liver is still oxidizing slowly onward. One-third goes into the 5.2 ounces you carried home (two have been eliminated earlier) something like 15-plus times — meaning your blood alcohol level won't approach normal until quitting time the next afternoon. And for most of that period, you're still legally too drunk to drive!

Looking at your post-inebriation status through aviation eyes, you're not going to be an able aeronaut for quite awhile.

The *intent* of the AF's 12-hour-bottle-to-throttle rule is to allow twelve full hours of healthy body time before flight, which means that you should start the 12 hours with only traces of alcohol in your system. In our example, your first "clean" pre-flying hours won't really begin until your BA level reaches normal, fifteen-plus hours downstream. And in thrilling cases like this, you'll need all of those subsequent 12 hours to get body and soul recoordinated. (Incidentally, some of our airline brethern have 18- or 24-hour rules.)

Proof? In one study, volunteers drank eight standard highballs in a two-hour span and had their blood alcohol levels monitored for eighteen hours. (Note: Eight cans of beer or eight glasses of wine will produce about the same levels.) According to the report, some sixteen hours after

they finished the last drink, the subjects still had BA levels twice as high as the level at which behavioral impairment occurs. And, for 10 of those 16 hours, the subjects were still at the staggering-drunk BA levels.

### System Effects

Now that we have the alcohol being pumped around your system awaiting its turn at your liver, let's look at what is happening to the man. After the alcohol is absorbed in your bloodstream, it is distributed rapidly throughout all the tissues and fluids of your body. It reaches its highest concentration wherever you have the most blood vessels — but its effects are most important in your nervous system. Immediate effects include temporary increases in pulse rate, blood pressure, and depth of breathing. Also, because alcohol is a vasodilator, the small blood vessels under the skin enlarge, giving you that warm rosy glow — and also wasting body heat in cold climates. Because alcohol tends to irritate the lining of your stomach, the digestive juices think they are being put to work, and you — with those extra juices sloshing around — think you ought to be fed. (Note: If you have a pet ulcer, the increase in hydrochloric acid will be painfully evident.) And the digestive tract isn't the only system with more juices — you'll also feel an increase in urine production, partly from the increased fluid intake but also due to the diuretic effect of alcohol.

**BA Reference Chart**

| Consumption | BA Level | Effects |
|---|---|---|
| 2 bottles of beer<br>2 glasses of wine<br>2 highballs | .06 | The start of the gray area; 35% decrease in using reasonably complex skills. |
| 4 bottles of beer<br>4 glasses of wine<br>4 highballs | .12 | Above uniform vehicle code unsafe-to-drive level of .10; clumsiness, serious loss of judgment and coordination. |
| 6 bottles of beer<br>6 glasses of wine<br>6 highballs | .18 | Obviously intoxicated; uncoordinated, incoherent, hazard even when walking. |

(After Spence and McFarland)

### Stimulants?

You've heard it said that alcohol *must* be a stimulant — after all, it stimulates your stomach, bladder, mouth, and sociability. But technically alcohol is a depressant; under the influence of this drug, almost all the inner man is slowed down. So why do you *feel* stimulated? Partly because your higher control centers are depressed, allowing you to revert to the brave, chest-thumping beast lurking within. Another major factor is that much of your apparent response to alcohol actually comes from

your drinking environment. At a party or happy hour, you and the folks around you are springloaded to the good-time position. The exciting festive atmosphere, amplified by the dulling of your judgment and sense of responsibility, produces this euphoric feeling. Without these influences — like when you're drinking at home, alone —indifference, drowsiness, or depression are quite common. (And you thought these were some of the reasons *why* you drink alone!)

### Recap

Okay, that about covers the basic ideas. Now let's pause to recap the facts in part one:

* Alcohol is the key ingredient of many of our favorite beverages.
* Unlike most materials, alcohol is absorbed without digestion.
* Several factors, like food and dilution, affect absorption rate.
* Alcohol dose is the culprit, not type of drink or total liquid consumed.
* Your liver can oxidize one-third of an ounce per hour, and all extra alcohol is held until it can be eliminated.
* Alcohol is a depressant which slows down the inner man.

A common and commonly-used chemical, alcohol has pleasant, specific, rapid, and complex effects on you, the consumer. Or, to sum it all up, alcohol's popularity as a beverage is due to its success as the self-medicated cup that clears today of things past and future.

# Global Notes

## tv highlight

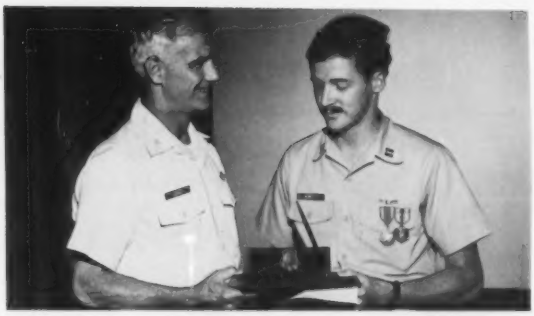
"TSgt Michael Fish, this is your life," spoke Ralph Edwards recently on national TV. It was a complete surprise for Sgt Fish, a pararescue man from the 71st Aerospace Rescue and Recovery Squadron at Elmendorf AFB, as he walked onto the stage before an audience of 500 people.

Mr. Edwards reunited Sgt Fish with six men whose lives he had helped save and with many of his military friends.

One of the highlighted rescues was made in Vietnam in February 1969, when Sgt Fish was lowered from a helicopter through intense ground fire to treat and rescue the crew of a downed Army helicopter.

The aircraft commander of the crashed helicopter was unconscious and had two broken legs. Sgt Fish put splints on the broken legs, put the survivor in a basket, and, under enemy gunfire, dragged him through the trees to the rescue helicopter. He returned to aid the copilot, who still was trapped in the wreckage, but bad weather set in and the rescue chopper had to leave. Sgt Fish stayed with the copilot for 17 hours before they were picked up. For this heroic rescue mission, Sgt Fish earned the Air Force Cross.

## award winner



Capt Brian E. Morrill, WC-130 aircraft commander formerly with the 54th Weather Reconnaissance Squadron at Guam, received a MAC Outstanding Individual Safety Award from Col Ted L. Bishop, Commander, 9th Weather Reconnaissance Wing. The award recognized Capt Morrill's initiative and ingenuity in successfully landing his WC-130 with a very serious flight control emergency.

## blind faith

SSgt Earl Stafford and Sgt Joe Droge of McGuire's 2017th Communications Squadron's Approach Control recently helped save a Piper Cherokee pilot's life. The pilot flew into a solid wall of fog and did not know how to fly on instruments. Sgt Stafford continuously talked to the anxious pilot, reassuring him and giving him instructions. At the same time, Sgt Droge coordinated with other agencies to assure clearance for the lost Cherokee. The pilot was finally vectored to a radar final approach, and he broke into the clear at 800 feet and made a safe landing. AFCS presented Sgt Stafford and Sgt Droge with Certificates of Exemplary Service for the excellent job they did.

What happens when dissimilar metals get together in the presence of an electrolyte? The bird-busting result is corrosion, which mutilates metals through . . .

# Electrochemical Canker Sores

by Capt Phil Budd

CLYDE SKINNER SWORE silently as the wrench slipped off the rusted nut. Not only was he starting to freeze, lying there on the snow-covered driveway trying to change his license plates, but now he had a bloody knuckle to boot. Retrieving the wrench and trying again, he promised himself that he would replace these rusted, corroded nuts and bolts with some brass or plastic ones just as soon as the weather warmed up again.

Most of us have experienced similar problems while working on our cars or doing minor home repairs. Corrosion and the effects of corrosion are all around us. Look at the body of your car. See any paint blistering? Any corrosion around the battery terminals? How about that pitting in the aluminum trim or chromed bumper? Corrosion slowly but surely is eating away at almost every metal around us — unless we stop it or prevent it.

Corrosion has plagued the military ever since metal was first used in equipment. Rusty swords and green brass bothered Caesar, Charlemagne, and the Kaiser. With the introduction of high performance weapon systems, corrosion has become a major and critical problem. The Air Force spends millions of dollars a year controlling and preventing corrosion, and more millions are lost in corrosion-triggered accidents.

In this article we will discuss (as nontechnically as possible) what corrosion is, what causes it, what the most common types are, where it is found, and what we can do (and are doing) to prevent corrosion. While we'll limit our discussion to corrosion in airplanes, don't forget that corrosion affects every piece of aerospace equipment we have. And many of the prevention techniques we will talk about later can be applied to all this equipment.

## What It Is

According to "Corrosion Control and Treatment for Aerospace Equipment" (TO 1-1-2), corrosion is the deterioration of a metal by reaction to its environment. Another way to look at it is that corrosion is the tendency of a metal to return to its natural state. For example, remember our rusty nut and bolt? Both of them were made from iron produced by smelting the pure metal out of its ore, iron oxide. In rusting, the iron reacts with the moisture in the air to reform iron oxide.

True, there are a few metals that do not corrode. However, it would be hard to build an airplane out of gold or platinum because of weight, strength, and cost limitations. There-

fore, we use lighter, cheaper, and stronger materials such as aluminum. Unfortunately, aluminum corrodes.

## Causes

For our purposes we can assume that all corrosion is caused by electrochemical action. This condition occurs when two dissimilar metals are in metallic contact and an electrolyte connects them (see figure 1). The electrolyte can come from spills, condensation, or even the moisture in the air. The two dissimilar metals might be aluminum against steel, or they might involve dirt or dust with metallic content that collects on another metal. Electrochemical corrosion can also occur in a single material which is not completely homogeneous. For instance, an impurity in a metal, or adjacent dissimilar crystals in an alloy can produce a small local cell and cause local internal corrosion. (Either of these processes can also be called galvanic corrosion.)

What happens now is that a small electrical current develops and allows ion transfer leading to the creation of a new material. This electromechanical process can be compared to what goes on in your car battery. The lead and zinc, two dissimilar metals, act as the positive and negative plates and a liquid (the electrolyte) provides the path for the electricity to flow between the two plates. In a battery, electrons transfer from one plate to the other. One plate is being gnawed away and the other is being built up. One plate feeds on the other, with matter and electrons both moving. For our benefit, we'll call this corrosion.

We mentioned earlier that corrosion is a reaction of the metal to its environment. Moist, salt-laden, industrially-contaminated air enhances corrosion. As a matter of fact this contaminated air is one of the worst possible environments. Note: All of our MAC coastal airlift bases are located in just such an environment.

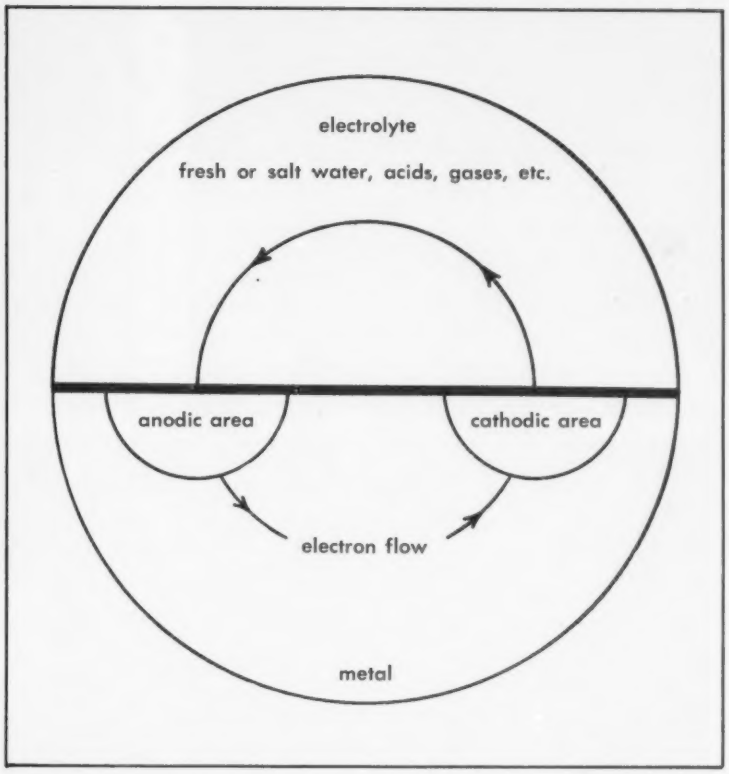



**Figure 1.** Corrosion Cycle

## Common Types of Corrosion

Although there are many types of corrosion, we'll just discuss the ones most common in our operations.

**Uniform Etch:** This type of corrosion could also be called uniform attack. The environment, attacking a metallic surface, forms uniform etching — hence the name. Oxidization is one process of uniform etch. Good examples of oxidization are rust or the dulling on an aluminum surface. While a little bit of this oxidization on an aluminum surface is good because it forms a protective coating, if the oxidization continues the corrosion worsens and can cause structural integrity problems (see figure 2).

**Pitting:** This is characterized by a white or gray powdery deposit, similar to dust, which blotches the surface. When the deposit is cleaned away, tiny pits or holes can be seen in the surface. Pitting is most common in aluminum or magnesium al-

loys but can occur in any type of alloy (see figure 2).

**Intergranular:** This type of corrosion attacks the grain boundaries of a metal. Intergranular corrosion occurs when a pronounced difference in electrical potential exists between the grain boundaries and the remainder of the metal. In severe cases the metal may be reduced to separate grains with as much strength as a handful of sand. This stage is known as exfoliation or laminar corrosion.

**Exfoliation:** An intergranular form of corrosion which shows itself by lifting up a layer of surface grains of a metal. The force to do this comes from the expanding corrosion products at the grain boundaries just below the surface (see figure 3).

**Stress Corrosion:** Stress corrosion results from the combination of physical stress and electrochemical corrosion. The stress can be internally applied as from improper machining or heat treating, or externally applied by shrink fits, deformation, and applied loads. Since stress corrosion caused by internal stresses is very difficult to detect, it is the most dangerous type of corrosion (see figure 4). (Also check the article "The Great Bird Buster," page 19 of this issue.)

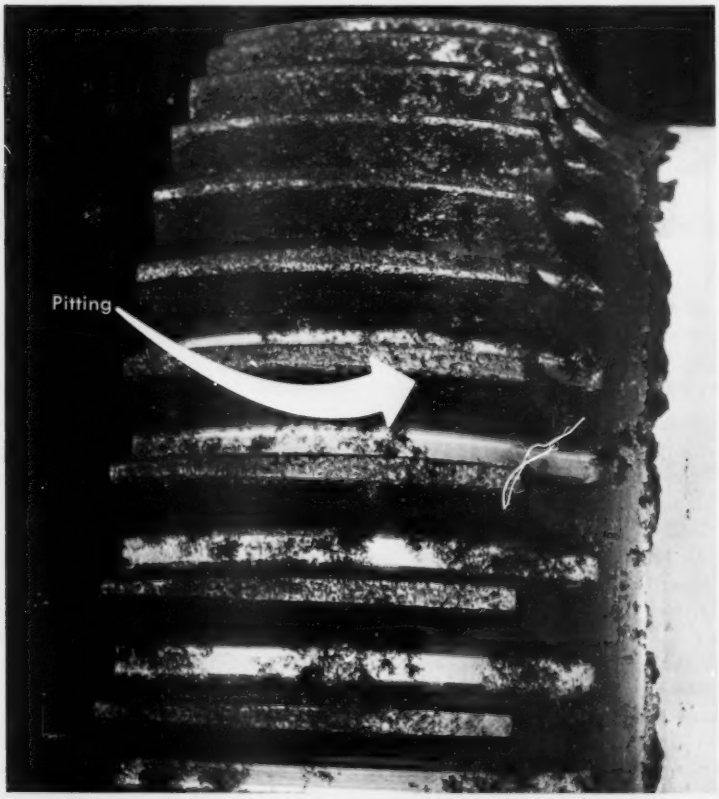



**Figure 2.** This gear shows uniform etch (rust) and also pitting. The white or gray powdery deposit has been removed.

## Where It Is Found

We've briefly described several types of corrosion, but where does corrosion occur on our aircraft? Probably the simplest answer would be every place. The greatest opportunities for it are in areas that are inaccessible or not clearly visible to frequent inspections. Any nook or cranny — under floor areas, between skin joints, a scratch in the paint or a machined surface, under stringers and frames—wherever contaminants can collect will eventually suffer corrosion. Also, the landing gear and wing, because of the externally applied stresses, are very susceptible to stress corrosion.

## Prevention

There are two ways to control corrosion. First — most effective and least costly — is prevention. Second — effective but costly — is removing the corrosion and treating the affected areas.

An active prevention program is the key to reducing our corrosion problems. Besides washing our aircraft frequently, MAC maintenance men also perform frequent detailed inspections for corrosion and protective coating failures. They take immediate corrective action when signs of corrosion appear, and repair surfaces that have been scratched or marred before corrosion has a chance to form. They clean internal areas that collect contaminants and keep drain holes unplugged. Another daily job is wiping down exposed hydraulic cylinders, removing dirt and grit that may scratch the surface and induce stress corrosion. Other tasks include overall

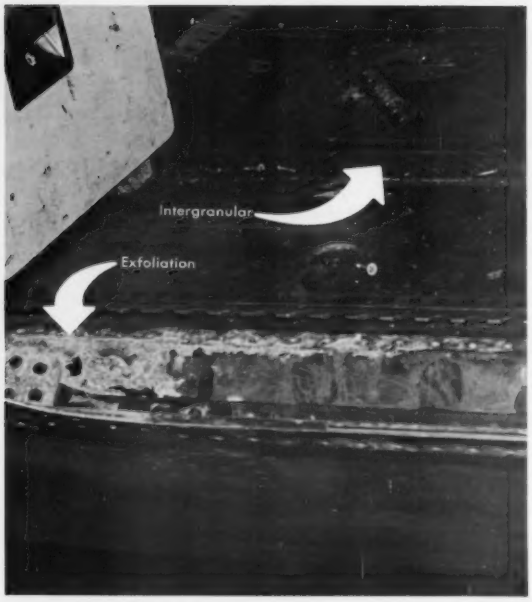



**Figure 3.** Inspectors looked at this '141 crew entry door, found intergranular and exfoliation corrosion.

**Figure 4.** Stress corrosion caused this gear component failure. The dark area is where the corrosion began.

protection of equipment from the elements, immediately cleaning up any liquid spills, and making sure that they personally don't contribute to the corrosion problem by damaging painted, machined, or coated surfaces.

## Other Prevention Methods

In aircraft design and production, other measures are also taken to prevent corrosion. Some of these methods, all of which have been used on our C-141s, C-5s, and most of our other aircraft, are:

**Plating:** Coating a base metal with nickel or chromium by electroplating, or alcladding pure aluminum onto alloys by rolling. This coating must be nonporous and unbroken.

**Cathodic protection:** Applying zinc or cadmium plating to steel. The zinc or cadmium dissolves as corrosion tries to attack the steel, thereby protecting the steel.

**Anodizing aluminum alloys:** Aluminum alloys are anodized, which forms a hard coating of aluminum hydroxide on the surface of the metal. This also provides a good bonding surface for paint.

**Jointing materials:** A good quality sealant is used to waterproof joints and to eliminate cavities that could trap and hold liquids.

**Painting:** Most MAC aircraft are painted for corrosion control. The paint needs to bond well to the aircraft skin, be impermeable, not absorb water, be light weight, be flexible, and still have a hard surface. We have painted the C-141s and are repainting the C-5s with a polyurethane paint. Other types of paints used on Air Force aircraft include epoxides and acrylics.

**Shot peening:** In correcting and preventing stress corrosion, blasting the surface of a piece of metal with small beads similar to ball bearings at high velocity compresses and work-hardens the surface, making it more resistant to stress corrosion.

## Conclusion

As a rule of thumb, if it's a metal it will corrode. Cleanliness and other methods of prevention are the keys to a good corrosion control program. If you find a warning sign such as a damp area, discoloration, blistered or cracked paint, a powdery residue, or any other suspicious condition, write it up. Corrosion, like cancer, must be stopped before it spreads. Prevention and early detection of corrosion will make our MAC operation safer and more efficient.

# So What Do I Say Now?

Say there, friend. Got an oil leak on number two? Want to sell a car or advertise a meeting? Have a safety suggestion on the tip of your pencil? Need to whip off a note to your folks (or wife) asking for an increase in your allowance? Don't just sit there gazing at a blank sheet of paper — read on!

Everybody, at some time or other, writes short notes and messages. Except for the type we stuff in our shirt pockets to remind us to pick up a loaf of bread or drop a card to Aunt Minnie, these short bits are aimed at someone else. And oddly enough, the person on the receiving end doesn't get the message as often as we'd like him to. Since getting our point across is important, we've got a lot to gain from saying the right thing at the right time.

All this doesn't take as much effort as it might seem. In less time than it takes to down a Cool Cola, you can latch onto a couple of basic points. We're going to show you how a little bit of effort with that pencil can bring great big dividends.

Suppose you want to tell a buddy that the movie you just saw was a good one. Which way would you say it? "It has been recently determined that the present offering at the facility cinema is rather to be enjoyed. Proceed to view same at the earliest possible convenience." Or: "It was a great show. Go see it."

**". . . proceed to view same at your earliest convenience."**

It's an easy bet that you'd never use the stuffy, pompous lang-

uage. Your buddy not only wouldn't get the message, he might even think you were trying to be funny. Anybody who spouts big words like those couldn't be serious. Since most of us really don't want to be known as oddballs, we use short common words when we speak.

But give the average, ordinary, run-of-the-mill GI (and that includes both of us) a pencil, and what comes out? Yup! Gobbledegook, Garbage, and Great Big Words. Thousands of pages have already been written explaining why, and all these words have had very little effect. So what we'll do right now is forget about **why.** Instead we'll look at some of the better goofs spotted recently and perhaps share a chuckle. We'll also try to rewrite the examples to make them better and easier to read.

Where is a good place to look for bad pencil work? Official military letters may have some fine examples. How about this one, written in summary of a safety pitch? "It is therefore suggested that each unit discuss the above problem, resolve any deficiencies in applicable procedures, and one suggestion in particular."

Got any idea what the man said? Disregarding the last phrase, which belongs in a separate sentence, it might have been something like this: "We've got a problem. Let's talk about it and see if we can do better."

Did you notice the changes we made? We took an impersonal statement, written by "it is" and aimed at "each unit," and made it a personal one. We pitched out the big words which gum up the works and put in some nice short plain ones. And we thumbed our nose at the idea which says official words must be horrible ones.

Here are some examples for **you** to practice on. All were lifted from material which crossed our desk recently. Take a minute and see if you could make them "mo' bettah," as they say in Hawaii.

**"Recommend arrangements be made for concurrent presentation by the gaining command operations and/or standardization evaluation shops and engine and airframe manufacturers to avoid piecemeal indoctrination."** Hint: It has something to do with aircraft and safety.

~~Precipitate activity entails negation of economy.~~

Haste makes waste.

**"The accomplishments of assigned Air Force mission and functions is frequently retarded by the inability of Air Force personnel to annunciate their mental concepts in a manner comprehensible to their intended readers."** Hint: Bad writing stinks.

And one more, selected because it was part of a message on saving money through better communication. **"An analysis indicates the increase in handling cost is primarily due to unwarranted distribution to activities having a questionable interest."** Assuming the "questionable interest" has no subversive meaning, we think the point was something like this: "Save money. If people don't really need to know, don't send them copies."

"But, but, but . . . . ," you say, "this applies only to staff people. Us poor little airplane riders and wrench benders don't get to write anything important as that." WRONG! Anything you write for someone else to read can be just as important as the sentences quoted above. Let's take a deeper look.

Suppose it's your job to put a notice up on the bulletin board. It says: "Section meeting tomorrow, 1000, be there." It's aimed at a certain group, and it's important. But you've made another writing boo-boo by not including enough information. The guy who reads the notice after midnight will wonder which tomorrow you mean. And if men outside your section see the same board, they won't know who is included. In other words, one of the first things you've got to include is some specific facts.

Let's say you have a car to sell. Do you put up just anything on

the bulletin board? Not likely. You list items like: year, horsepower, accessories, and anything else which will help you make the sale. You make the ad eye-catching and easy to read, and try to put yourself in the best position to get results. All notices, letters, and announcements should get the same attention.

In a very similar vein, suppose you have a strong interest in an airplane. More specifically, something on the plane needs to be fixed because your life could depend on it. Which of these write-ups do you think would get the best results?

a. This %+&*()/#$ airplane stinks. Fix it!

b. Radios noisy.

c. During flight at FL 390, OAT —52°C, in ice clouds, 46 passengers, two hours after lunches were served, all engines operating normally, copilot's armrest began to sag.

d. Right tire worn beyond limits.

Having tried all four on long-suffering maintenance men, we can vouch for the results. The first one was answered "So does the pilot" and was left unsigned. The second was cleared with: "Ground checks okay" since the power was off and the radios were definitely not noisy. The third was forwarded to the flight surgeon, who suggested a diet. The last got us a new tire.

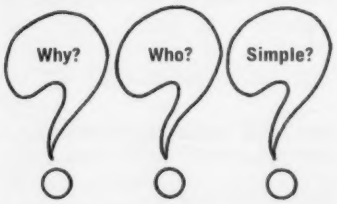
While the job of making better write-ups falls mostly on the flight crew, we've seen some sign-off notes which left us cold. One favorite at en route bases used to be "C/F." The guy who wrote it knew what he meant, and knew why he used it. But we had wanted the item fixed, and C/F just didn't tell us a thing.

Another on the list is "NIS," which is not much comfort. "R&R, CKOK" is a bit more explicit. Or maybe we're just more used to it.

But you get the point. If we don't put down enough information, either in writing something up or in clearing the write-up, the other man is left holding the guess.

Here's an example of a short message that didn't say quite what the writer intended. "Please send me form for free food. I had a baby two months ago and did not know anything about it until a neighbor told me." Do our short write-ups sound as silly?

If they do, or if our longer messages sound stuffy, we need to latch onto some simple rules. Here are three questions which will make you a better writer almost instantly. Whether you write 781 entries, bulletin board items, or safety letters, memorize them.




Question one: Why am I writing this? Jot down whatever you hope to get done or whatever you need to "sell." It stands to reason that if you don't know exactly what you have in mind, your reader won't, either. Take time to know why.

Question two: Who is going to read it? A maintenance man will want facts, pure and simple. Buddies will accept buddy-talk. Higher-ups may need more ordered prose; they can usually stand hard words like "arrangement" or "presentation." A group of ladies will like different wording than a group of men. Look hard at your readers, and write for them.

Question three: Is it simple? Short words pack a fine punch, and can be used to say some pretty strong things. "Cold" is colder than "hypothermal;" "bash" and "wreck" are both harsher than "unfortunate occurrence;" "butt" will be understood before you even finish writing "gluteus maximus." Everyone understands short words more easily than long ones.

So there are three simple rules, dressed as easy-to-use questions. When you aim short words at specific people, you can expect the results you want. Tonight, when you go home, hand the wife this simple message in your own handwriting: "Let's go out to eat." We'll bet she'll get the message and be dressed in a trifle less than two minutes.

# Numonya

**Dear Doc**

One day last week I was scheduled as aircraft commander of a Jolly Green local day training mission. My copilot, who is an experienced chopper pilot, was in the process of transitioning to the H-3. I didn't expect any particular problems this flight since I'm well qualified in the aircraft and can hold my own when it comes to hairy tales and recoveries from tight situations. Besides, I'd flown similar missions many times before.

During the briefing, the copilot mentioned that I seemed to have developed a cold. I acknowledged that I was a little congested, but felt fine. Fact is, I'd had a cold for over three weeks, but due to the tempo of operations, I had avoided our "pilot-grounding" Doc. Except for only a few "under-the-weather" days, I'd felt pretty good — and anyway, being a gung-ho type, I was prepared to endure some discomfort.

Following the briefing, we stopped by the hangar, then proceeded to our waiting helicopter and performed an extremely thorough preflight. The flight was enjoyable and everything went smoothly.

After landing, debriefing, and signing off the 781, we started a brisk walk back to our office. Shortly after leaving the hangar, I began to wheeze and became short of breath. Halfway between the hangar and office, this rotor wrestler was doubled over, gasping for air. My fingers were turning blue.

The look on my copilot's face was one of confusion. He didn't know whether I had dropped my pesos or if this was somehow related to his flying ability. I managed to stagger to the flight surgeon's office, and after X-rays and a close examination, the Doc advised that my "slight head cold" looked suspiciously like pneumonia.

Because of a can-do, I-can-hack-it attitude, I had jeopardized the lives of my crew. Sure, I can try to justify the incident by saying it didn't happen in the air, but who knows what would have happened if I had lost control of my body when I needed to be at my best? My copilot was an experienced helicopter pilot, but his training in this type aircraft was limited; and there is no guarantee that he would have been able to handle all emergencies.

I have always been careful and diligent about inspecting aircraft and wouldn't think of ignoring danger signs from aircraft instruments. But, foolishly, I neglected the many warning signs from my body telling me I was not up to par.

Just thought I'd pass on my lesson learned so maybe some other fly types won't try flying with "walking pneumonia" or walking after flying with pneumonia.

A wiser "Jolly" driver

**Dear Wiser**

Thanks for your letter. Hope it will serve to alert others to the hazards of flying when sick or overly fatigued. Flying can and often turns out to be very demanding.

Just because you happen to be flying helicopters and don't expect to fly at high altitudes certainly doesn't warrant hovering off into the wild blue when you're not up to speed. Granted, you may not encounter ear and sinus blocks, but that "little cold" can be the indication or forerunner of pneumonia, influenza, measles, and other diseases.

By delaying treatment and pressing on, you are not only exposing yourself to more serious complications but are risking spreading "the bug" to everyone else on base. Pneumonia may attack at any season of the year, but is especially prevalent in winter and spring. It sometimes begins suddenly, but in most cases follows a bad cold, another illness, or surgery. Symptoms include chills, a pain in the chest, a hard dry cough, and a high fever. It is important that the patient be treated by a physician — who'll order you to be kept in bed and get plenty of rest, nourishment, and fluids.

Pneumonia can be fatal to folks who have low vitality, are overweight, or drink too much liquor. Your best preventive measure is to keep your body resistance high, get plenty of rest, and eat well-balanced meals.

Remember your flight surgeon. He's there to help you, so go see him. If you avoid his treatment and recommendations, you may find yourself with a longer-lasting grounding.

See ya around the system,

**Doc**

(Adapted from Navy *Approach*)

A job well done is almost standard for airlift people. Here's a photo report of an exercise conducted by the 438 MAWg.

# CAM on Camera

Text by A1C Tony Magaldi; photos by Lt Col William H. Quelch, Jr., 438 MAWg, McGuire AFB

It's quiet there on the ground, but there's a feeling of anticipation. Then a roar builds somewhere below the downwind horizon, and a formation of transports flashes overhead. Troops step through aircraft doors like so many chain links, chutes billow and pop, and in seconds a combat force is on the ground and ready for action. Shades of the second big war? No — it's just another exercise for MAC crews and their air-delivered passengers and cargo.

One of MAC's jobs is to be ready to airlift men and materiel to any point on the globe as required. The job entails a lot more than a swift flight over a drop zone and a green light at the appointed time. It takes good planning — matching loads to aircraft, checking and rechecking rigging, route preparation, procedures briefing, and lots of practice. Navigators must find the exact point in space for each drop; loadmasters must guarantee that loads go out on the split second and that the chutes work. Combat control teams must arrive ahead of the main force, define the drop area, and provide on-scene advice. Airborne troops and cargo must arrive on time and survive the drop, and the aircraft and crews must be able to repeat the delivery as often as needed.

And even though all the steps of preparation are right, it still takes regular practice — and a lot of it — to keep the fine edge of proficiency and readiness which aerial delivery requires.

To capture the full story of a combat airlift mission, Airman Magaldi and Col Quelch followed several crews through all the steps. Here is how it looked to these men at McGuire. In their words, "The men and units of the 438th Military Airlift Wing are ready."

GET READY: A good combat airlift mission begins with good preflight preparation. Sgts Dave Gramlin, Daniel Brierley, and Joe Farner carefully pack a load chute; TSgt Daniel Thompson, Sgt Brierley, and Sgt James Williams check the rigging on a jeep packed for airdrop; an unidentified maintenance man finished changing a tire; and 6 MASq aircraft commander Capt Frank Schmeer conducts a preflight briefing for standardization chief Lt Col Myles Richmond, and wing commander Col George M. Wentsch.

GET SET: Loadmasters MSgt Eugene Rosan and SSgt Linwood Wishek recheck equipment to be dropped; Sgt Wishek supervises the loading; and another pallet is eased aboard. After the loads are secured, the mission will be ready to depart.

# CAM

DELIVER: Starlifter 413 awaits the start engines order; TSgt Larry Taylor gets set for a last-minute check on the drop-zone winds; and Col Wentsch keeps an eye on the lead C-141 in his formation. Left: one jumper braces for the opening shock as a second man leaves the aircraft. Right: There goes one jeep, aerial delivery.

LAND AND RECOVER: A chutist nears the end of his drop; once on the ground, tidy-up time begins; Lt Tom Farrar secures his main chute; and a McGuire transport stands ready for the next CAM.

The most insidious electrochemical canker sore is stress corrosion. This pernicious devourer of apparently solid metals can become . . .

# The Great Bird Buster

by Capt Lowell A. Converse
MAC/LGMWA

THE GALAXY CREW COMPLETED THEIR PREFLIGHT, started engines, and taxied for takeoff. As the pilot stopped the aircraft in position on the runway, the crew heard a loud bang and the aircraft lurched to the side. An outside visual inspection revealed that the right main gear yoke had broken completely in two. The problem? Analysis of this failed part revealed that stress corrosion had destroyed the structural integrity of the yoke.

Corrosion has been a bugaboo for many years, and has caused a lot of heartburn in aircraft design and production. All experienced B-57 and C-141 crews are intimately familiar with stress corrosion. (Note: If you haven't read the corrosion article, "Electrochemical Canker Sores," on page 8, this issue, please do so.) In this article we will discuss some of the structural integrity problems MAC has encountered because of stress corrosion, some of the efforts being taken to remedy them, and how some problems could be avoided in future aircraft.

## Effects

The object of an aircraft designer is to make an airplane as strong as an anvil while keeping it as light as a

feather. Modern technology has achieved much of this objective through the use of high-strength, light weight materials. But modern technology has not yet solved all our *problems*. Actual operational use of these lightweight materials has produced some severe structural corrosion troubles. In MAC, we are fighting to correct corrosion-induced failures in the B-57F, C-141, and more recently in the C-5.

The most significant corrosion MAC has had to date has been in the 7075-T6 aluminum. What does that nomenclature mean? The first group of numbers, 7075, designates the make-up of the aluminum alloy, and the T6 designates the type of heat treatment it has received.

A specific example of stress corrosion that most '141 drivers will remember is the nose landing gear oleo trunnion failure (figure 1) on the C-141 at Elmendorf a

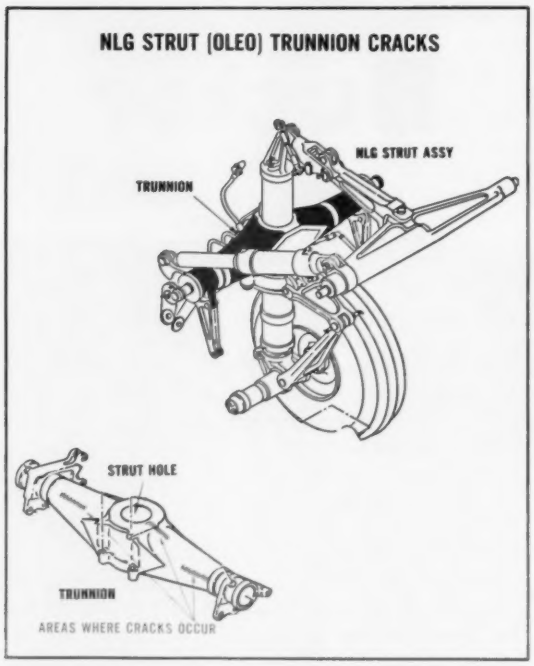



Figure 1

couple of years ago. T6 was the culprit, and T73 aluminum is now being used to replace the T6 in a redesigned replacement trunnion. T73 aluminum is the same base metal, 7075, as used in T6, but T73 is a different heat treating process which makes the metal much less susceptible to stress corrosion.

Another component being switched away from T6 is the C-141 nose landing gear drag link trunnion. It is being changed to T73 aluminum.

The B-57 corrosion problems were in the wings. Some were resolved with splices and in some cases wing components were replaced with units made from T73.

The first real serious problem we had in the C-5 with T6 aluminum was several months ago when the main landing gear yoke on one of the birds failed catastrophically. The first 50 aircraft had T6 main landing gear yokes and these are now being reheat treated to T73 standards. Also, some of the C-5 flap track torque box attach fittings, made of T6, are showing signs of stress corrosion. These are being replaced with steel fittings.

Although we've been talking about aluminum, all metals to some degree are susceptible to stress corrosion. For example, the C-141 nose landing gear shock strut outer cylinder (figure 2), which is made of steel, has

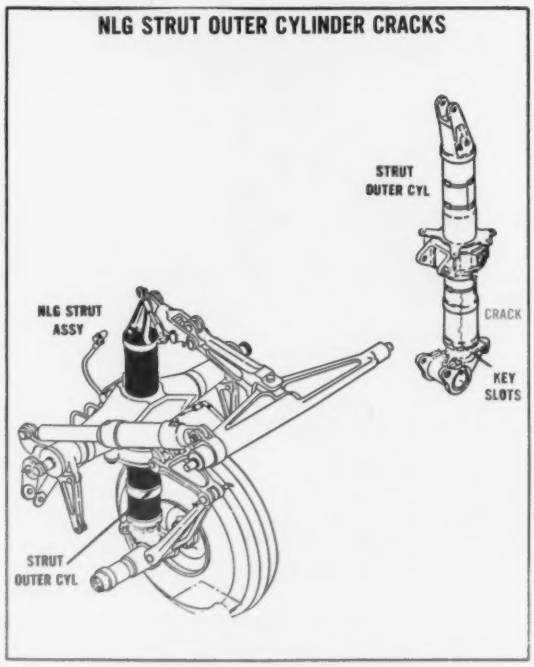



Figure 2

been plagued with stress corrosion. This cylinder is being replaced with one made from another form of steel.

The problems we've mentioned are just some of the deficiencies which have required base or depot level re-

pairs. Solving these problems has cost us a bunch — both money and manpower — not to mention the down time on the aircraft. (Note: To date 104 TCTOs, involving 547,600 man-hours, have been published on the C-141 landing gear, with seven major fly-in retrofit programs required.)

## Controls

We know we've got problems, but how do we go about identifying and preventing them now and in the future? There are several possible ways. Let's take them one at a time.

A DOD-directed C-5 Corrosion Control Board, a first for a USAF aircraft, is tasked with identifying and addressing C-5 corrosion problems. The board is composed of engineers from MAC, AFSC (C-5 SPO and AF Materials Lab), AFLC (C-5 corrosion engineers and AF-wide corrosion engineers), and Lockheed. The team makes quarterly visits to C-5 bases and performs detailed inspections, specifically looking for signs of corrosion. A control board like this one, primarily advisory in nature, not only helps the aircraft being examined but also is a move to help keep future aircraft from going through the same growing pains that the Starlifter and Galaxy have and are going through. A good example of this new thinking is the B-1 Corrosion Control Board. People from AFLC, AFSC, and the contractor have formed a board with the hope of reducing B-1 corrosion potential. (Note: This control board idea fits right in with our system safety approach in new product procurement.)

Still another method to ensure corrosion prevention procedures is the formation of an integrated logistic support detachment. AFLC assigns people to the prime contractor's facilities during new aircraft or system purchases. The detachment is tasked to ensure that adequate technical data is provided, that fabrication techniques result in maintainable hardware, and that adequate corrosion prevention provisions are built into the systems. The first detachment is already in being on the B-1 program.

Still another approach being taken to prevent corrosion and maintain aircraft structural integrity is the Analytical Condition Inspection (ACI, reference AFR 80-13). An ACI is a recurring ultra-thorough inspection performed on a small sample of airplanes; for example, the C-141 ACI effort involves six aircraft per year. Many parts which can be removed, including many requiring fastener removal, are removed and inspected. This inspection is being performed on present MAC aircraft and will be performed on future new equipment, with the goal being to identify problem areas before they become critical.

The ACI concept is providing its worth, though it will not catch everything. The corrosion problems on the C-141 longerons escaped detection during five years of IRAN and ACI inspection programs. (Note: A longeron is one of the longitudinal structural supports in the floor of the aircraft.) The B-57 wing cracks prompted an ACI of MAC's B-57s, and if an ACI program for the H-1N had been in being, the problem with the main beam panel fatigue cracks might have been averted. We don't believe that the ACI program is a cure-all but it will go a long way in identifying and reducing our major problems.

## Reports

Another area that must be improved if we are to gain useful information from failure experience is more accurate and complete reporting followed by better exploitation of the reports. This is where each and everyone of you in the airplane business can help out. Formal reporting procedures, outlined in TO 00-35D-54, are often not adequately followed at wing and depot level maintenance facilities (DLM), particularly in the area of the aircraft structure. These reports should be our most lucrative source of information; unfortunately, they are not. A possible major reason is that maintenance people often make on-the-spot repairs and never submit a report.

Better use of the information depends on a number of separate activities. Programmed Depot Maintenance, IRAN, and ACI activities should supply a wealth of information for design effort. The commonality of corrosion difficulties in different aircraft indicates that a definite void may exist here. The valuable experience gained on one aircraft apparently is not freely cross-fed to the people involved on a new aircraft. This leaves the designer and managers of other ACI programs and other AMAs in the position of trying to reinvent the wheel.

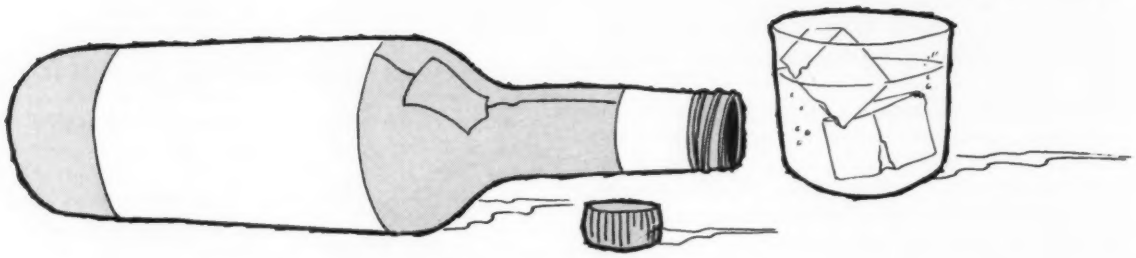
We have structural integrity problems now and will undoubtedly have them in the future. Thorough inspections and corrosion control programs will minimize the problems. A cross-feed of information to designers and engineers from the maintainers and fliers will go a long way to prevent future equipment from suffering the same problems. But none of these will be successful unless the guy in the field does his part to defeat the great bird buster. That guy is you — and the job is to communicate.

Not drunk is he who from the floor
Can rise alone and still drink more;
But drunk is he who prostrate lies,
Without the power to drink or rise.
—T. L. Peacock

## *Part Two:*

# *The Aftermath of Social Self-Medication*

by Maj R. L. Wing



IN PART ONE, we looked at the basics — what alcohol is and how it affects us generally. Now for the unpleasant side of the picture, the aftermath. What about intoxication and the other effects, and what kinds of problems do we face after the bottle is empty?

### Intoxication

The big question: how does alcohol intoxicate us? We'll begin at moderate BA levels — say .05 or so. According to the FAA medics, the first and most profound effect is from changing the level and availability of two body chemicals, *serotonin* and *norepinephrine*. These chemicals, called neurohormones, act on the nervous system and apparently modify mood and alertness. Alcohol has about the same effect on these two as does the strongest of the modern tranquilizers. Consequently, one of the first things to go to pot is your attitude or your "mood-judgment" factor. Typically, you'll start to chuck caution to the winds well before your skills and performance are affected.

The second major effect involves your alcohol-steeped thinker. Interestingly, the behavior changes wrought by intoxication and by hypoxia are strikingly similar. As your BA level goes up, your brain looses its efficiency in using oxygen, and your judgment is definitely on the decline. At this point, memory, reasoning, skill, and performance values all begin their insidious slides. You begin suffering measurable losses in eye-hand coordination, quickness of reaction, and overall muscular functioning. But, as mentioned earlier, your judgment and your ability to perceive these changes have decreased, and as far as you're concerned everything is ops normal. Now, suppose you compound the brain's oxygen inefficiency with low bloodstream oxygen levels — produced either by high carbon monoxide levels (as in smoke-filled rooms) or by being high aeronautically as well as physically. This condition will multiply the punch of the punch — in some cases, actually doubling the effects.

Now let's run the BA level up a bit more — maybe .10 or so. Your centers of coordination and reflex actions begin to get seriously involved. You start to get foggy and stumble-tongued, and your behavior is characterized by mumbling and veering. You may still be thinking at nearly normal rates *on single events and items*, but you can't concentrate as well and your logic and reasoning both depart rapidly.

Then, in addition to losing ground in terms of mood, judgment, reasoning, coordination, reflexes, balance, and couth, you find that your eyesight becomes distorted. Three of the visual effects creep up slowly: narrower field of vision, lowered efficiency in visually fixing an object or word, and poorer ability to dark-adapt. Then the fourth one strikes — "positional alcohol nystagmus," or an uncontrolled rapid horizontal movement of your eyes. This result, which stays with you after the party, is firm evidence that you've exceeded all reasonable limits. It's also one of the real reasons why you need to keep one foot on the floor after you're in bed to help reduce dizziness (but it doesn't help much!).

## Other Effects

A couple of other effects which occur at BA levels above the "trace" point are worth mentioning. The first is known as the *histotoxic* effect, when the tissue cells are "poisoned" and they cannot use the available oxygen effectively. The presence of alcohol limits the oxidation of glucose, lactic acid, and pyruvic acid, all substances which are important in carbohydrate oxidation. Brain tissue is especially susceptible to this histotoxicity, and this factor underlies the brain cell oxygen starvation condition mentioned earlier. In fact, some studies strongly hint at an accelerated death of brain cells during high BA conditions.

Second is the interaction of alcohol and other drugs producing the *compound* effect. We've already seen that there are many factors which affect alcohol absorption, mostly retarding it. The great variety of medications which trigger compound effects may produce retarded *or* accelerated reactions, and the results are quite unpredictable. Cold remedies, decongestants, cough syrups, sleeping pills, many prescription medications — all of these work with alcohol in strange ways, and with reactions which vary from person to person and from day to day within the same person. You've read about several public personalities who parlayed booze and pills into that big terminal PCS. All we can offer is this: be very, very careful.

Third is that dreadful, well-documented effect better known as the *hangover*. Zone one, of course, is the burn-down process; you're still unsafe at any breath-tester but the pain level is masked by that self-dosed anesthetic. Zone two is the retch-and-remorse area, where you first fear that you won't get well, and then are afraid that you will. Those gunshot-like footfalls of a common housefly are felt because you have a splitting headache brought on by alcohol's hygroscopic property — meaning its tendency to take water out of the surrounding tissues and solutions and hog it to itself. (Oddly enough, another process seems to go on in your brain. In fact, our pathologists report that deceased alcoholics have very *wet* brains.) When this happens in your spinal column, the fluid level decreases and that blob of brain starts to sag, causing strain and pain in the supporting tissues. You get well only when you pump out the alcohol and replace the lost water — and this can only be done slowly.

Zone three is where you bring the maltreated man back to a normal level. Though the alcohol is gone, while the high levels were in all the tissues there were significant changes in your body chemical balances, causing a lot of cells to act like they've been sick. In addition, you likely achieved an overall level of fatigue due to late hours or odd activities and now you're asking an ailing mass of protoplasm to help make itself well and untired. That takes a lot more time — as you have found out.

And then there's zone four — normalcy. Being the marvelous physical specimen you are, eventually you recover and plod toward the next episode.

## Problems

Okay, you've hung with us through the discussion of the physiochemical factors which put the brew into and out of the man, and through a look at the psychophysiological changes and troubles which beset the sotted soul. Now let's contemplate what sort of problems lie in wait for the alcohol-laden body — perhaps yours.

As a crewmember (or truck driver or brain surgeon or housewife) you have mastered certain moves and maneuvers which the psychologists call learned behavior or psychomotor skills. To perform these skills you must have three things going for you: sensory feedback, eye-hand coordination, and perception of changing values. When you are sound of mind and body, you function at top

# The Aftermath of Social Self-Medication

level in all categories and have your normal dexterity and cunning.

However, there are several factors which tend to degrade your level of performance. First, of course, is *disuse* — the state of getting rusty. Next is *fatigue*, which includes not only the short-term hard-labor kind but also the long-term body-and-mind fatigue which often affects us as crewmen. Third is *physiological stress* — such as sustained low blood sugar or the effects of nicotine, for example. Fourth is *G force*, which varies the muscle effort to perform certain tasks and causes unfamiliar perception of body part positions. And then there's number five, *alcohol*, which not only contributes specifically to fatigue and physiological stress but which multiplies the degrading effects of all the other factors.

## In Practice

"That's nice to know," you say, "but so what?" Okay, now is a good time to jump from the abstract into the concrete. Let's presume that you are an average crewman. You faithfully observe the letter of the 12-hour rule, though not necessarily the intent. And let's say you are now aloft while still suffering some residual effects from your last encounter with the flowing bowl. Combining the skill degradation information just offered with the facts discussed under effects of alcohol, you will find yourself having these problems:

* Your vision still is not normal in terms of area of field, eye tracking, ability to focus, or ability to perceive change and motion. Also, your nighttime or low-light-level vision is well below par.

* Your other sensory devices are still blunted on both ends. Your sense of touch is a trifle numb, and your hearing probably isn't as good as usual. Also, you aren't responding as swiftly to this limited hand, pant-seat, and ear information.

* Your attention and concentration are still depressed as you work your way back from this highly concentrated major illness. In fact, the discomfort you still feel probably claims a good part of your consciousness.

* Your logic and rationality are still behind the power curve. This means you are likely to offer irrelevant responses even to such mechanical items as checklist challenges or the greetings (and sage advice) of your fellow fliers.

## Remedies

Obviously, now that we've got you feeling this bad, you'd like to talk about recovery aids — including some of the wives' tales. Will you get well? Probably. What's the best remedy (note that we didn't say preventive)? Time. And *more* time.

However, there are also several actions you can take to help your recovery. Though you might feel like trying a hair of the dog again, try getting some good food down. This will not only give your stomach something

to work on but will raise that blood system nutrient level a bit. Fluids will help, too, especially to replace the ones soaked out by the alcohol. An aspirin or two might ease the pain, and, according to at least one doctor, taking a standard dose of an antiacid will help soothe the old gut also.

Now, how about coffee and oxygen, both of which are touted as helpful in speeding sobriety and recovery? Well, we'll give them a very positive *maybe*. Caffeine is a stimulant, and it can help arrest or modify some of the effects of the depressant cycling around your veins. Jokes about the old wide-awake drunk notwithstanding, coffee will stimulate your brain a bit. Concerning oxygen, do you remember our point that one of alcohol's greatest effects was to interrupt tissue oxygen use? Logic suggests that having more oxygen around will help. In one experiment, 60 percent oxygen was administered by mask 20 minutes per hour for six hours and this tended to produce favorable results in cases of acute alcoholism.

Both oxygen and coffee have some value. However, in our opinion, both these remedies fall in the "aspirin for finger amputation" class. But, if you think they help you, they just might; don't be discouraged because they didn't help us.

## Miscellanea

Now for a few other hard facts:

* Heavy drinking, which we will define as more than two drinks per night more often than two nights per week, flags the drinker as a man with a problem. Says Dr. McFarland, "Heavy drinking is a symptom of personal or social maladjustment or immaturity." (Incidentally, one of the strangely common roots of personal tension in aviators is an underlying apprehension about flying. Contemplate *that* the next time your entire crew hits the bar the fourth night in a row . . .)

* A change in drinking habits is the signal that the drinker is experiencing some personal troubles or environmental changes he can't cope with easily — changes which produce increased stress, anxiety, frustration, and fatigue. Adding alcohol problems to the list really compounds a bad situation.

* According to social scientists, the person who drinks to escape from his emotional problems and the pressures of everyday living is quite likely to become an alcoholic. (So what is one of our rallying cries? "Okay, gang, let's hit the club and unwind from that miserable leg, etc. . . .")

* Over ten percent of American alcohol users are problem drinkers. Considering the total tippler tally, that's a pile of problems. In fact, it is likely to work out to one problem per two MAC crews. And you still think our bottle-throttle activities are a no-sweat operation?

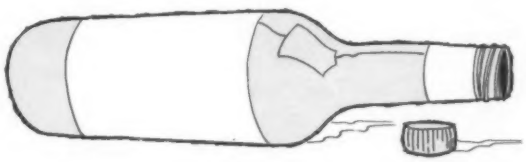
* A person with an abnormal, irresistible, and insatiable craving for alcoholic liquor is termed a "dipsomaniac."

## Wrap Up

Okay, now for the commercial. We'll agree that you have a great measure of right in choosing your own activities. We'll also agree that your employer — be he MAC or any other agency — can dictate your minimum physiological conditions while you're on the job. Most of us know there's a strong moral requirement to be fit to fly, backed by a regulatory stricture not to drink within twelve hours of launch.

But the problem, as you've seen, is not simple. In line with General Ryan's strong words on integrity (and as we discussed when we explored integrity in our September issue), it all comes back to *you*. We're operating in a world of crewman surpluses, suspicion of disability retirements, snowballing efforts to prune the budget by pruning the payrolls, and greatly increased competition for promotions. Considering all this, carrying a booze albatross around your airborne neck may be quite contrary to your best interests.

Obviously, we can't suggest you cut the scene entirely — that would be both dictatorial and unreasonable. But we do feel that moderation, plus establishing personal minimums of eighteen hours 'twixt libation and aviation, will go a long way to enhancing your survival. Otherwise, you may wind up being declared as surplus as certain nonfunctional appurtenances on male swine. And that, friend, is really being useless.



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# C.R. TERROR

**The Potentate of Parties finds that there's more to the new breed than just youth.**

The Ace of all Aerospace reached through the flight deck door, grabbed the edge of the hayloft, and swung his jiggling bulk through the opening. As his feet thudded to the deck, he yelled over his shoulder, "Greenbar, you and what's-his-face clean up the cockpit while I give these transient wrenchbenders the word. And let's get with it — we're on our own time now."

In a flash he was out the crew entry door and delivering a torrent of words to the first NCO in sight, a very startled fleet service supervisor. By the time he'd found the right maintenance man to debrief, the others on his crew were unloading the bags and carrying them around the crew bus to the main door.

Knowing good leadership starts with good example, he sprinted heftily back to the bird, picked up his portable potable kit and hand-tooled leather hang-up bag, and lumbered into the bus. "Come on, come on!" he coached copilot Frank N. Greenbar and Danny Doppler, his new navigator. "Set a good example for our enlisted troops — **move it.**" The two lieutenants began jogging through the baggage drill and piled the last of the 60-pound B-4 bags in a heap in the crewbus aisle.

As they dropped, sweating, into the nearest open seat, they were greeted by another exhortation from the Great One. "I know you guys are new, but you've got to get with the program. Uncle MAC wants us to be very efficient — and that means we can't waste a second between the bird and the bar. Besides, Flossie Flynurse said she was gonna RON here tonight and maybe we can get something going." A lecherous grin spread across his face, and Max Torque turned to share a knowing wink with Ty Downs.

The Great One's trip through the ACP was rapid and visible. In his wake, little puffs of ashes swirled down on a flood of dislodged papers. Departure time and destination were confirmed, then the Gross Gripper took up his outbound vector and barged through the swinging door, almost causing an inbound staff officer to eat his cigar. "Scu'me," muttered C. R., never veering from his trajectory.

The VOQ drill was about the same, and the two young lads were just starting to hang up their tourist clothes when C. R. splashed out of the shower, doused himself with Eau d' Aphrodesia and aimed his ponderous

bulk at the O club. As he left, the two startled lads heard this observation: "See-you-at-the-bar-but-if-it-looks-like-a-live-one-don't interrupt." Then he was gone.

Frank and Danny performed their post-flight ablutions, strolled leisurely to the club, and decided to locate their boss in case he wanted to join them for dinner. They had just stepped through the door to the bar when the voice of the Great One thundered thickly out of the dimness. "Hey, there you guys are. C'mon over here an' meet Flossie. Flossie, these are the new toads I was tellin' you about." A fragrance of juniper berries flooded the air, and the neophyte crewmen realized that their leader was several potions ahead of them.

They stayed for one round of drinks, then eased their way out to the eatery. As the maitre d' ushered them to a table, Danny was shaking his head. "Man, I don't understand the old man. Is he always like this?"

"Yeah," answered Frank. "I've been with him on a couple of trips, and he really hits the ground running."

"Ya mean I've got that to look forward to when I get to be his age?"

"Naw," offered Frank, "you're smarter than that. And I'm surprised that he's lasted this long. You ever tried to compute how many barrels of sauce he's soaked up in the last twenty years?"

Their conversation was interrupted by the waitress, and by the time they'd ordered dinner, C. R. and his social life had been forgotten.

Not so for C. R., who still had his social life very much in mind. After the first few drinks, Flossie had broken the word to C. R. about her engagement, and it wasn't long before the Frustrated Follower of Femininity found himself drinking alone. Gloom was setting in, and C. R. was beginning to wish he knew where he could find a swinging party. Then he brightened as he suddenly spotted his old buddy Thurlow Baxter and yelled to him to come over for a few. He hadn't seen Thurlow since they were together in the old 1503d Wing at Tachi, and it wasn't long before memories and martinis began flowing freely. But a maudlin air eventually settled over the pair as they started bemoaning the passing of the good old days.

"Hey, Bax," slurred C. R., "'memmer the time old Rags got in the Mai Tai contest with Tony an' we hadda take 'em both home inna cab? Whadda party tha' one was! Don' have no parties like that now."

"Yeah, an' then there was the time we hadda land at Haneda an' spent the mornin' waitin' for the crew bus an' drinkin' french seven'y-fives. These kids don' know what fun is, do they?"

"I'll drink to that," toasted C. R., getting mouth and glass close together but managing to pour most of the drink down his front. Bax helped him locate a barmaid for the cleanup job, then slid slowly and steadily toward the floor. "Yessir," he offered as he vanished, "them was the good ol' days."

C. R. felt a fit of giggles coming on, and by the time he had regained his composure the bouncer had eased the Master Manipulator's bulk into the cool night air. He slumped on a bench to wait for enough strength so he could make it back to the Q. He was still resting when Dan and Frank walked by. "Hey, ya par'y poopelers," he said, "where ya been?"

"Major Terror," said Frank, watching his leader warily, "we decided to see what was showing at the outdoor movie, and then went over to bowl a couple of lines. You shoulda been with us."

"No way," mumbled C. R. "Got more 'portant things to do. Hey guys, he'p me home."

The two lieutenants propped their leader between them and kept him pointed in the general direction of the billets. They were exhausted by the time they eased him into the room, but C. R. was oblivious to their efforts. He was again wailing over the fate of the good old days. "Ya kids, ya don' know what it takes ta have a goo' time. I ain' **never** gonna make line crewmen outa you if ya don' get with the program. Gimme my li'l black kit an' we'll get the par'y rollin' again."

While Frank rummaged slowly through the closet for the kit — which he'd already hid under his bed — Danny gently maneuvered the Great One to a horizontal position. And then, almost as soon as his head hit the pillow, C. R. was out. His last comment as sleep claimed him was "These guys just ain't like the old crewzzzzz."

Danny watched the inert figure for several moments, then shook his head sadly. "You know," he said thoughtfully, "I've been reading about this guy's exploits for many years, and I didn't believe anyone could possibly have that many scrapes. How did he ever survive them?"

"I dunno," offered Frank, "but after watching him operate on this trip — and after playing walking ambulance to get him home tonight — I can understand how he got his reputation. He's a terror all right — Man, after **this** night before, I don't relish the thought of trying to fly with him in the morning."

## Help! Save the Pieces!

This is a plea for help. Help from all you troops who remove and replace failed or worn-out aircraft parts. Time after time we read incident reports where these remarks appear: "Exhibit inadvertently discarded" or "Item returned to repairable stock." Believe it or not, these parts are valuable to the analysts at the air materiel area servicing your airplane. The experts can test and analyze the failed pieces *only if the pieces are available.* So please don't throw the part away or put it back into supply channels until you have checked with your quality control or safety representative to see if they want to use it as an exhibit. Thanks.

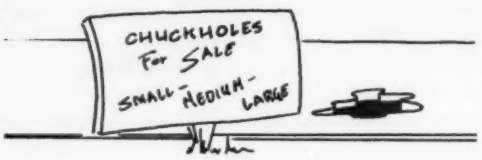
## Even the Best can Bash

According to the National Transportation Safety Board, an air show crash that took the life of a highly experienced and renowned stunt pilot, was caused by fuel starvation. The pilot, with more than 12,000 flying hours and nearly 1,500 hours in his special aerobatic aircraft, had just completed a low level, inverted, "hands-off" pass over the airport and was making an inverted turn when his aircraft snapped upright, struck a tree, and spun to the ground.

Investigators found the aircraft fuel tank empty with no evidence of post-crash fuel spillage. The air show operator, who had seen the demonstration flights many times before, noted that he did not observe the stunt pilot add "a minimum of five gallons of fuel" to the aircraft's tank before takeoff, which was the pilot's customary practice. The crash occurred after some four minutes of taxiing and 16 minutes of stunt flying, much of it at full throttle with high fuel consumption.

Chairman Reed of the NTSB stated, "Stunt flying perils aside, this accident clearly was preventable. Proper flight planning and preflight inspection of an aircraft are fundamental to safe flight for the beginner and veteran flier alike. This accident shows how human failing can close out a pilot's log book regardless of how many hours it records."

## Mini-Mess




There's a saying among country folks about roads with chuckholes: "Hey, Clem, if you'd pay your taxes you could get your road fixed." Our rural neighbors aren't the only ones with this problem — we ran across an incident where a base commander apparently was behind in his taxes too. Seems a chuckhole in a taxiway on his base had been a problem for several months.

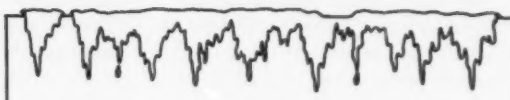
Base operations was aware of the problem but never bothered to inform the safety troops nor had safety been keeping up on what was happening. Temporary repairs were ineffective because the hole kept growing. The maintenance crew covered each fresh patch while it cured with a piece of unsecured aluminum matting, and aircraft prop or jet blast kept blowing the matting off. Finally the chuckhole got to giant size and something really had to be done.

The base engineer and the base commander organized another repair exercise. The repair crew started work but managed only to create a huge traffic snarl. So the project was stopped and the crew threw a large piece of matting over the hole.

To this point no coordination between the base commander, engineer, base operations, or tower had taken place. You guessed it — an accident was about to happen. Because of a combination of wind conditions, the way the matting was lying, and a little too much engine thrust, the matting was soon up in the air. Result: one aircraft damaged and one aircrew tabbed with improper taxi technique.

The brunt of the cause was traced (rightfully) to the supervisors. Future airfield construction and repairs will be coordinated by the commander, engineers, safety folks, base operations officer, and anyone else deemed necessary. This episode sounds like a WWI caper, but it really happened in 1972.

## Beware the Bite



Every winter a few of our folks lose toes, ears, or fingers to frostbite. The injury might strike while you are hard at work in official pursuits — like fixing a bird on an icy, wind-swept flight line — or in off-duty pastimes — like walking a sweet young thing home from the base flick.

What causes frostbite? Ice crystals, formed when water in the skin and associated tissues is chilled to below the freezing point. Depth and severity of the injury are determined by how long you're out in the freezing weather, and on how fast heat is dissipated from your body (this is where the chill factor charts figure in).

How do you increase your chances of becoming a frostbite victim? Unfortunately, previous frostbite marks you as a candidate with greater susceptibility. And drinking works against you too, because of the effects which alcohol has on circulation and on judgment. Your frostbite odds go up with your BA level. A lack of physical activity also reduces the necessary exposure time in frostbite cases — the man holding the lantern will be hurting long before the man chopping wood.

*Detection*: The buddy system is one of the oldest and best methods. If your friend notices a sudden blanched look about you, you've got the prime symptom. For hidden parts like fingers and toes, a fairly reliable sign is a sudden change from the bitter cold feeling to numbness or to apparent warmth with no cause. You've got to act swiftly when these danger signals appear.

*Treatment*: Quickly provide some rewarming — hold a hand over an exposed ear or nose; get those hands under some cozy armpits; dry and warm up those feet. *Don't rub* frosted areas — the ice crystals will fracture cell walls and really make a mess.

*Prevention*: Since few ever get frostbitten in the tropics, keeping all your fingers, toes, and exposed skin as warm as the rest of your tropical-type body is sure to work. Good gear and common sense are sure to help.

(*Adapted from Navy Lifeline*)

## Low Bridge on the Short Cut

Ever noticed that after your first few trips from one point to another you find a short cut? It's true on highways, on base, and around aircraft. People working outside the C-5 have found a short cut to get from one side of the big bird to the other without having to walk all the way around. All they need to do is stoop down a little and walk underneath (something you can't do on a C-141). There is one small problem, though: It is very easy to catch your head or shoulder on the UHF antenna located under the forward fuselage. The result is generally one broken antenna and a knot or gash on your tender body. If you're really in such a hurry that you *must* go under, *watch out.* Avoid the antenna — or try crawling.

## Writing Contest Rules

Who can enter? You can. All aircrew members, maintenance and support people are vital to flying safety and are urged to enter. While only military personnel and DAF civilians assigned to MAC or MAC reserve forces are eligible for awards, anyone can submit an entry. All "non-award eligibles" will receive appropriate special recognition. No more than three entries per individual — please!

The first three place winners will receive an engraved walnut desk set. Honorable Mention winners will receive a handsome pen and pencil set.

Your entry must be original, unpublished, and have a valid flying safety message for MAC. Please keep each entry between 1,000 and 3,000 words. That's about 6-14 pages, double spaced.

Your entry should be typed in two copies, double spaced, with no identification except the title. Then attach a cover sheet with the story title, your name, address (military address if you have one) and a brief biographical sketch. Mail your entry to: The MAC Flying Safety Writing Contest, MAC/IGYE, Scott AFB, Illinois, 62225. Entries must be postmarked no later than 31 March 1973, and must be received at MAC/IGYE on or before 7 April 1973.

## Smoking is Bad, But...

Okay, you've made the big decision — you've had your last weed and are off tobacco for good. Fine. Now you have two main choices of keeping yourself straight: will power or one of the chemical substitutes.

Here's a tale that will argue strongly for will power. A middle-aged pilot signed into his new base and promptly went to the fly doc with what he felt was a chest cold. Not so, opined the doc, who started him on a medical evaluation route ending at the Pulmonary Center at Scott. While the specialists were giving him the fine-tooth bit, they discovered that his liver was below par and getting worse.

The truth finally came out. While enduring the medical exams, the pilot had decided to give up smoking, and to help him in this effort he had started taking 8-12 tablets daily of a commercial preparation. When he knocked off the canned courage, his liver returned to normal and he was soon back on flying status. Cost: several months' worth of medical talent and flying time. Cause: self-medication.

## *A Tad on the Short Side*

"There I was at Podunk Muni on a hot day. Marvelous town — one bar, the main street freshly wetted down to control the dust, and all the people really nice. In fact, we met most of them in the airport snack bar, a small room with a vending machine on the south wall.

"As I computed my takeoff data, I noticed that my critical field length was a tad longer than the long smooth place where airplanes land and take off. I had talked to home plate a little earlier, and they indicated that critical field length should present no real problem, but there it was, right on my little card. 'Maybe I made a mistake; do it again. Nope, still comes out that way. If I wait 'til the sun goes down and things cool off we'll be legal, but I'm sure they need the airplane at home and we're just a little bit out of limits. The odds of losing an engine during that short period of "too late to stop and not enough runway to get airborne on one engine," are pretty small. Let's go home!'

"Well, I did, and I survived. But you know, I wasn't too smart. I yielded to get-home-itis, and I took an unnecessary risk.

"I'm a professional in my business, and that simply was not professional behavior. The reason I even tell this story is that I hope some other 'professional' will think about it and come to a wiser decision than I did when he runs into the same situation."

*—Anonymous*

# after deadline . . . .

THE FRUITS OF AN H R -- A recent hazard report dealing with wake turbulence and separation from jumbo jets has brought about an agreement with FAA. Controllers will honor individual requests for extended separation between your aircraft and a jumbo jet if practical. While Air Force controllers will offer 4 minutes or 10 miles of separation, the present FAA separation policy is 2 minutes or 5 miles. Controllers will notify you if you are following a jumbo and then it will be up to you to request the additional separation.

MAGAZINE MATTERS -- Several quotes from recent letters may be of interest.

* From a fan: "I submit that we don't get THE MAC FLYER here on Guam in the greatest haste." (There are two reasons: First, we no longer can send you copies via direct air mail. Second, your supporting pubs distribution point-- in this case through 9 WRWg -- apparently isn't expediting the copies they receive on your behalf. Pass the word to your safety man and have him raise some sand.)

* From the Admin folks: "GPO is reexamining all of the cost factors relating to their proposed increases in the public sales prices of periodicals. This will delay implementing the proposed increases in the subscription rates." (Note: You can still get in under the $2 rate, though the cutoff could come at any time.)

* From a non-MAC unit: "Your publication would greatly enhance our ability to stay current. We would appreciate a copy sent directly to us." (Sorry; courtesy copies can be furnished but only through your major command publication distribution center. Unfortunately, not all PDCs support this requirement with alacrity and dependability. Plan B, of course, is the subscription route.)

COMING ATTRACTIONS -- Weather will be the big thing in our February issue, with features on wind shear, haze, and changes in forecasting services. C. R. also gets in the act with a self-brief snafu. And you get a chance to sound off -- it's annual reader response time again.



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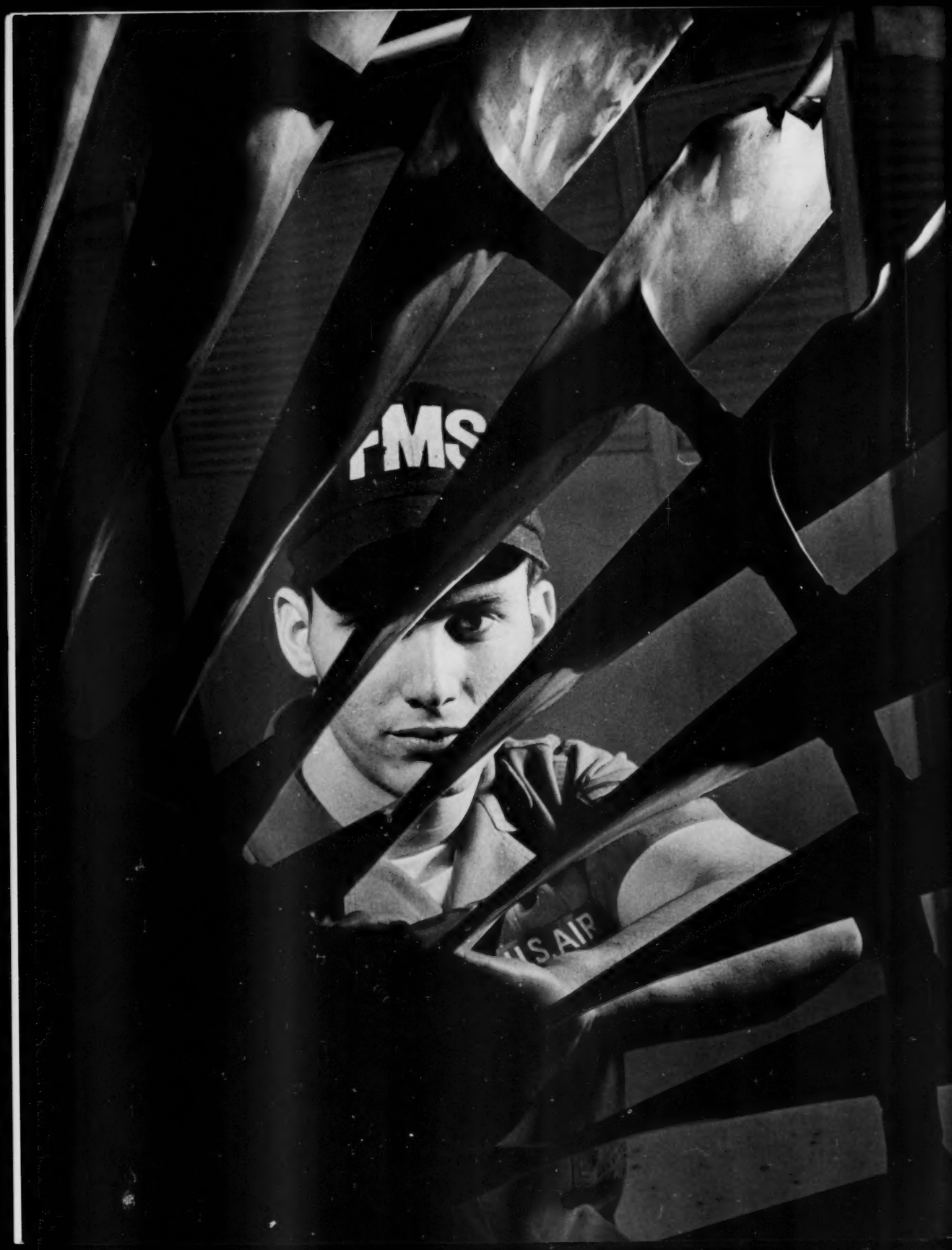
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